PSYCHOLOGICAL LITERATURE.

Les Phénomènes Psychiques et la Température du Cerveau. ANGELO MOSSO. Phil. Trans., Vol. 183, pp. 299-309. 3 Figs. (Croonian Lecture, 1892.)

Mosso's previous work upon circulation in the brain, and also upon mental and muscular fatigue, have given him most valuable preparation for attacking the delicate problem of brain temperature in relation to psychic activity. His earlier work revealed the fact that blood pressure in the brain rises during mental activity, and also that there may be fluctuations of blood pressure, which are independent of psychical activity. Mosso had also become suspicious that Schiff's theory of brain temperature needed modification, and had been made duly alive to the fact that brain temperature would mean very little unless the temperature of the blood was taken at the same time.

Experiments were made upon animals under morphia and anæsthetics, and also upon man. Delicate mercurial thermometers, made expressly for the purpose by M. Baudin of Paris, and capable of reading to 0°.002 C., were employed, the bulb being generally placed between the dura and the skull, but in some cases under the dura. Temperatures of interior of body, blood in carotid artery and brain were taken simultaneously.

In general, brain temperature is lower than interior body temperature. To demonstrate that this is due to radiation of heat from surface of head, it is only necessary to keep the animal in a medium heated to the temperature of the rectum. Under these circumstances, the temperature of the brain is always higher than that of interior of body by from 0°.50 to 0°.63 C. This proves that the brain is the seat of active chemical changes, which make it a great thermogenic organ. Under ordinary conditions, great psychic activity or the action of exciting drugs may cause sufficient increase of heat production in the brain to raise its temperature as much as 0°.3 above that of the internal organs.

Curves showing superimposed, the internal, carotid and brain temperatures give great clearness and precision to the subject. In profound sleep under morphine, the curves of brain and carotid temperatures are seen to very nearly coincide,—the brain temperature a trifle lower, and both somewhat lower than the internal temperature. Shouting in the ears of the animal causes a slight rise of brain temperature, and electric stimulation of the cortex is shown to cause a sudden rise of temperature considerably above that of the carotid and almost up to internal temperature, the animal showing no signs of waking. Experiments made while the animal is awake show a great amount of heat production in the brain over that produced during sleep. This seems to be needed for the mere maintenance of consciousness. Greater psychic activity occasions a scarcely perceptible increase in temperature, the greatest rise recorded from this cause being 0°.01 C.

Experiments with various anæsthetics and narcotics show that these suspend the activities of nerve cells to such an extent that in deep anæsthesia, electrical stimulation produces no rise in brain temperature. Elective action of stimulating drugs on the different tissues is well shown by the injection of cocaine, ten centigrams of the hydrochlorate causing a rise in brain temperature of 0°.36 C., no change being observed in either muscles or rectum. The effect of cocaine upon the brain is rendered more conspicuous by combination with curare. In a deeply curarized dog, the temperature of the whole body was observed to rise 4°, from 37° to 41° C., within a half hour after the injection of the cocaine. That the effect upon the brain caused this rise is shown by the brain temperature being 0°.2 C. above that of the rectum during the time. The experiments are of special interest as indicating active chemical changes within the brain.

The Changes in the Optic Tracts and Chiasma in a Case of Unilateral Optic Atrophy. WILLIAMSON, R. T. AND M. R. C. P. (LOND.) Brain, Part LVIII. p. 230. 1892.

Hannah T., age 56. Complete loss of vision R. eye; atrophy of R. optic disc. Left eye and L. field of vision, normal. Sudden onset of blindness in R. eye after an attack of rheumatism, four years previous to death. Findings agree in the main with those, for similar cases, recorded by Purtschner and v. Gudden. The optic nerve of right side was much shrunken, and contained almost no healthy fibers. Left optic nerve was normal. In the chiasma, the degenerated optic nerve fibers were found to pass to the inferior surface of the opposite side. In the optic tracts, an area of degeneration could be plainly seen occupying the central area of the right side (uncrossed fibers). The left optic tract was much shrunken, and showed degeneration chiefly in the inner half of the inferior surface. Indications of degeneration extended also to the outer half of the inferior surface and to the outer surface. Hence uncrossed fibers occupy the central portion of the optic tract; while crossed fibers, with slight modification of Purtschner's statement, lie along the periphery of the tract. Microscopical examination was made by Weigert's method. A series of eleven well selected drawings add great clearness to the description.

I.—Il cervelletto; nuovi studi di fisiologia normale e pathologica. LUIGI, LUCIANI. Firenze, 1891.

II.—Sull' origine e decorso dei peduncoli cerebelleri e sui loro rapporti cogli altri centri nervosi. MARCHI, VITT. Firenze, 1891.

Of the above papers, the first deals with the physiology, the second with the anatomical connections of the cerebellum, as shown by degenerations resulting from partial or entire extirpation.

Dogs and monkeys were employed for the experiments. The cerebellum was removed, wholly or in part, under narcosis produced in dogs by hypodermic injection of morphia and chloral (morphia 2.5 centigram, chloral 1 gram), and in monkeys by morphia and chloroform.

The principal operations studied were: *Extirpation of the middle lobe of the cerebellum; extirpation of the whole cerebellum; extirpation of one-half of the cerebellum.* This latter was done by dividing the vermis in the median plane by means of a Græf's knife.

Operations upon the cerebellum at best are difficult, great care being necessary to avoid excessive hemorrhage and the injury to